Preparing for an RDD Attack

In this regular column, disseminating examples of best practice as researched by the US Department of Homeland Security, **Thomas Kenny** looks at terrorist attacks using a radiological dispersal device (RDD)

INTELLIGENCE ORGANISATIONS IN THE United States and abroad state that terrorist groups like Al-Qaeda have shown a strong and consistent interest in using RDDs in attacks. While RDDs have the potential to cause significant physical damage, experts believe they would be employed more as a weapon of mass disruption as opposed to a weapon of mass destruction. An RDD event would probably not cause immediate, large-scale casualties, but would create panic and widespread fear of radiation, extensive disruption of services, and costly remediation of property and facilities that could last for months or years.

■ **Emergency planners should consider developing RDD-specific plans and standard operating procedures that enhance responders' abilities to identify the radiological component of an RDD event.**
Radioactive materials are colourless, odourless, tasteless, and cannot be detected by human senses. Emergency responders may not realise that radioactive material has been released at an incident scene during the early stages of response operations. Emergency management agencies should train their responders to assume that radioactive material has been dispersed at an incident site after any explosion of unknown origin until proven otherwise. Responders can detect whether an incident has a radiological component through several methods, including random radiation measurement using detection instruments and documenting symptoms of increased exposure to radiation among responders and the general population. Symptoms include nausea, vomiting, and skin burns.

Agencies should also ensure that personnel likely to respond to an RDD event possess appropriate radiation detection equipment and should train them to properly use that equipment. Agencies can employ four categories of radiation detection equipment during a potential RDD emergency response.

Alarming personal radiation-detecting dosimeters can be used to monitor emergency responders' radiation exposure while performing time-sensitive, critical missions. Passive dosimeters do not display the dose level and thus could not be used to monitor doses at the incident site. However, these instruments can be helpful to measure a responder's total dose after an incident.

Survey instruments are used to detect the presence of a radiation field and surface contamination, as well as to screen people for contamination at the scene. Sensitive meters are used routinely to monitor people for contamination, and high-range instruments may be needed to survey the incident site.

Radionuclide identifiers are also used to determine the type of radioactive material released. The timely identification of the radioactive material can help emergency responders implement appropriate protective measures for victims, members of the public and emergency responders.

■ **Emergency response agencies need to plan for long-term management activities following an RDD incident.**
Pre-planning for an appropriate clean-up can be critical to site restoration activities. The extent of an RDD attack's social and economic damage may depend largely on how quickly and effectively responders establish a clean-up operation and the public's trust in that operation.

■ **Since a major metropolitan area is the most likely target of an RDD attack, city emergency planners should develop site decontamination plans specifically tailored to metropolitan areas within their jurisdiction.**
City emergency managers should consider three elements when creating site decontamination plans, the first being that of contamination distribution. The distribution of radioactive material can be homogenous or non-homogenous. Experts believe that following an RDD event, the dispersal of radiological material would be likely to be uneven and the radiation level in different areas would vary depending on meteorological factors, such as wind speed and precipitation. Plans should include previsions for hot-spots as well as moderately contaminated areas.

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Contamination location is another element that must be considered. Part of the radioactive material will deposit on buildings' external surfaces. However, some of the release may contaminate buildings' interiors through ventilation systems, cracks, and open doors and windows. Plans should detail provisions for decontamination of building exteriors, sidewalks, streets, parks, and sewage, as well as building interiors, including walls and floors, carpeting, and ventilation ducts. Transport systems and water supplies may also need to be decontaminated.

Finally, the type of contamination is important. Radioactive material may be released as a liquid spill or in solid form. Contaminated dust that has settled on the external surfaces of buildings may be common. Some radionuclides also may be absorbed by porous materials, such as concrete or wood, or become embedded in soil and plants. Plans should include provisions for cases when the only disposal method for contaminated soil is large-scale removal of contaminated dirt.

■ **The decision to decontaminate or to demolish a structure should be made on a case-by-case basis.**
Decontamination of some structures could be impractical or impossible in some cases. Planners should take into account several elements when deciding between these two options, including operation costs, labour, equipment, material needed, liquid and solid waste processing and disposal capabilities, overall level of contamination, and rebuilding costs. Planners should also take into account the social, historical, and religious significance of buildings. CRJ

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